Treatment Protocol: CARDIAC DYSRHYTHMIA - BRADYCARDIA **Ref. No. 1212-P**

Base Hospital Contact: Required for all patients with symptomatic bradycardia

1. Assess patient's airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*

2. If foreign body suspected, perform direct laryngoscopy for foreign body removal and treat in conjunction with *TP 1234-P, Airway Obstruction*

3. Administer **Oxygen** prn *(MCG 1302)*
   High-flow Oxygen 15L/min for poor perfusion❶

4. Initiate cardiac monitoring *(MCG 1308)*
   Perform 12-lead ECG if dysrhythmia suspected prn

5. For poor perfusion *(MCG 1355)*:
   Begin bag-mask-ventilation (BMV) ❶

6. Establish vascular access prn *(MCG 1375)*

7. Administer **Normal Saline 20mL/kg IV/IO rapid infusion** per *MCG 1309*

8. For persistent poor perfusion: ❷
   Begin chest compressions if severe ALOC
   Epinephrine (0.1mg/1mL) 0.01mg/kg slow IV/IO push, dose per *MCG 1309*
   Repeat every 3-5 min
   CONTACT BASE for Physician Consultation concurrent with above treatment

9. If suspected AV Block or patient unresponsive to epinephrine: ❸
   Atropine (0.1mg/mL) 0.02 mg/kg IV/IO push, dose per *MCG 1309*
   May repeat x1 in 5 min

10. Consider **Transcutaneous Pacing (TCP)** for HR ≤ 40 with continued poor perfusion *(MCG 1365)*
    For infants and young children place pacing pads anterior and posterior chest; for older children place as per adult patients ❹
    Recommended initial settings: rate 70 bpm (100 bpm if < 12 months old), initial current 40 mA and slowly increase mAs until capture is achieved
    CONTACT BASE concurrent with initiation of TCP

    If TCP will be utilized for the awake patient, consider sedation and analgesia
    For sedation:
    Midazolam (5mg/mL) 0.1mg/kg IV/IO or **0.2mg IM/IN**, dose per *MCG 1309*
    May repeat in 5 min prn x1 with Base order, maximum single dose 5mg
    For pain management: refer to *MCG 1345, Pain Management, d*ose per *MCG 1309*

11. For nausea or vomiting in patients ≥ 4 years old:
    Ondansetron 4mg ODT

12. For suspected overdose, treat in conjunction with *TP 1241-P, Overdose/Poisoning/Ingestion* ❺

SPECIAL CONSIDERATIONS

❶ Management of oxygenation and ventilation is the most important aspect of treatment of bradycardia in children. Squeeze the bag mask device just until chest rise is initiated and then release; state "Squeeze, Release, Release" to prevent hyperventilation. Young athletes, typically adolescents may have normal resting heart rates < 60 bpm, treat only if signs of poor perfusion.

❷ For pediatric patients with bradycardia (HR <60 bpm) unresponsive to bag-mask ventilation and continued poor perfusion who remain responsive, support perfusion with fluid resuscitation and epinephrine administration. For patients with persistent poor perfusion and severe ALOC, begin chest compressions, administer epinephrine and assess need for TCP. If you have concerns about initiating these therapies contact Base Physician for further guidance.

❸ Potential causes of unresponsiveness to epinephrine in children include increased intracranial pressure, beta blocker/calcium channel overdose, hypothyroidism, infection, congenital heart disease, and sleep apnea where administration of atropine could be of theoretical benefit.

❹ There is minimal data on the use of TCP in infants and children in the out-of-hospital setting. Patients unresponsive to BMV and epinephrine may be candidates. Base Physician consultation is recommended in these patients.

❺ Consider calcium channel blocker and beta blocker overdose in patients with bradycardia and hypotension. Ask about potential exposures including medications in the home. Hyperglycemia is a common finding with calcium channel blocker overdose.